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Motion Image Capturing System and Signal Transmission to Wireless Communication

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ABSTRACT

Main motive of this paper describes to detect and watch any specific location precisely, which are arranged for highly secured components such as platinum, topaz and residential location etc. The main advantage of this paper is to intimate the image signals to our cell phone using SMS facilities, while showing the images/messages in the cell phone, sound indicator invokes in the cell phone. Through this new research tool, the computer will identify the secured location by using this Web Camera or security camera, with some image analysis software so that when a certain condition is triggered by the camera, this intelligent camera immediately activates and captures the images, analyzes it, and sends signals to the cell phone as SMS message to a particular number with a code in the message. The autonomous events that might trigger the taking of a photo (or still image from a video camera) could be appearance of a certain face available in a database of recognized faces.

Introduction

Today, world has become fully modern mobile communication, each and everyone needs an innovative development of actual needs of day to day life. The main aim of this paper is to detect and watch any specific location precisely, which are arranged for highly secured components such as platinum, topaz, residential location etc. The hypothesis of this paper is to intimate image/message signals to the cell phone using SMS/MMS facilities nearer to the neighborhood. The computer can identify the secured location by using the web camera. If there is any person entering the place, this intelligent camera immediately activates and captures the images and compare with the static images. If any difference occurs, it sends the signals to the cell phone. This paper focuses of securing valuable, providing high security process, using immediate "cutting edge technology", process through messaging system such as SMS/MMS.

This paper has been organized as follow: Part- II, how or why we arrive this problem is discussed. Part- III, discusses about the methodology part of the problem domain. Part-IV, Experimental Results, Part-V describes about the conclusion and future enhancement. Part-VI shows the reference papers related to this work.

Review Collection

In the paper [1], two classes of algorithms for modeling camera motion in video sequences captured by a camera are proposed. The first class can be applied when there is no camera translation and the motion of the camera can be adequately modeled by zoom, pan, and rotation parameters. The second class is more general in that it can be applied when the camera is undergoing a translation motion, as well as a rotation and zoom and pan. This class uses seven parameters to describe the motion of the camera and requires the depth map to be known at the receiver. The salient feature of both algorithms is that the camera motion is estimated using binary matching of the edges in successive frames. The rate distortion characteristics of the algorithms are compared with that of the block matching algorithm and show that the former provide performance characteristics similar to those of the latter with reduced computational complexity.

The paper [2] introduces the concept of near-sensor image processing. By this, the authors mean techniques in which the physical properties of the image sensor itself are utilized to do part of the signal processing task. It is shown that the analog-temporal behavior of photodiodes combined with thresholding amplifiers can be used favorably to do certain low-level image processing tasks including median filtering and convolution. The given examples also show how adaptively to different light levels can be achieved in a natural way. To extract features from the image, such as moments and shape factors, the authors introduce a simple measurement function.

A high correlation is used to infer that there is a significant feature at the position that should be passed through the filter. The authors have tested the technique on simulated signals, phantom images, and real MR images. It is found that the technique can reduce noise contents in signals and images by more than 80% while maintaining at least 80% of the value of the gradient at most edges. The authors did not observe any Gibbs' ringing or significant resolution loss on the filtered images. Artifacts that arose from the filtration are very small and local. The noise filtration technique is quite robust. There are many possible extensions of the technique. The authors see its applications in spatially dependent noise filtration, edge detection and enhancement, image restoration, and motion artifact removal. They have compared the performance of the technique to that of the Weiner filter and found it to be superior.

The correspondence presents a fast exhaustive search algorithm for motion estimation. The basic idea is to obtain the best estimate of the motion vectors by successively eliminating the search positions in the search window and thus decreasing the number of matching evaluations that require very intensive computations. Simulation results demonstrate that although the

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performance of the proposed algorithm is the same as that using the exhaustive search, the computation time has been reduced significantly.

Determining the parameters of motion within a time-varying scene is an important problem in such fields as computer vision; motion compensated video coding, and tracking. Most motion estimation algorithms operate on image data that has been sampled in both space and time. However, very little work has been done to investigate the impact of the underlying sampling strategy on the motion estimation problem. The authors investigate motion estimation with time-sequentially sampled image data. They consider both centroid-displacement-based and Fourier-based approaches to motion estimation with this type of data. For comparison, they also examine the performance of these estimators with conventional, frame-instantaneously sampled data. The motion estimators are developed and evaluated in the context of the tracking problem. In particular, they present extensive numerical results showing the performance of the motion estimators in a simulated tracking environment within which the assumptions underlying the development of the estimators are violated. These results suggest empirical rules for choosing parameter values for the estimators.

The use of the image model of Part I is investigated in the context of image compression. The model decomposes the image into a primary component that contains the strong edge information, a smooth component that represents the background slow-intensity variations, and a texture component that contains the textures. The primary component, which is known to be perceptually important, is encoded separately by encoding the intensity and geometric information of the strong edge brim contours. Two alternatives for coding the smooth and texture components are studied: entropy-coded adaptive DCT and entropy-coded sub band coding. It is shown via simulations that the proposed schemes, which can be thought of as a hybrid of waveform coding and feature-based coding techniques, result in both subjective and objective performance improvements over several other image coding schemes and, in particular, over the JPEG continuous-tone image compression standard.

Transmission of still images and video over lossy packet networks presents a reconstruction problem at the decoder. Specifically, in the case of block-based transform coded images, loss of one or more packets due to network congestion or transmission errors can result in errant or entirely lost blocks in the decoded image. This article proposes a computationally efficient technique for reconstruction of lost transform coefficients at the decoder that takes advantage of the correlation between transformed blocks of the image. Lost coefficients are linearly interpolated from the same coefficients in adjacent blocks subject to a squared edge error criterion, and the resulting reconstructed coefficients minimize blocking artifacts in the image while providing visually pleasing reconstructions. The required computational expense at the decoder per reconstructed block is less than 1.2 times a non-recursive DCT, and as such this technique is useful for low power, low complexity applications that require good visual performance.

Many important problems in image processing and computer vision can be formulated as the solution of a system of simultaneous polynomial equations. Crucial issues include the uniqueness of solution and the number of solutions (if not unique), and how to find numerically all the solutions. The goal of this paper is to introduce to engineers and scientists some mathematical tools from algebraic geometry which is very useful in resolving these issues. Three-dimensional motion/structure estimation is used as the context.

However, these tools should also be helpful in other areas including surface intersection in computer-aided design, and inverse position problems in kinematics/robotics.

Methodology

Fixing Static Image

It's an administration module, which captures the photographs of specific object, which is going to be secured. In this module the system will calculate the number of pixels and size of the image. This fixed image is accumulated in a globalized memory area such as database. This database maintains an audit log, which indicates the process commencement and its security completion.

Capturing Images

In this module our automated web-cam will capture the motion images and convert those motions into static images which will be used later for image comparison. These static images are also maintained in audit log, which indicates the security administrator how long the camera activated and error deductions. In this audit log the time and date of auditing will also be accumulated.

This log information can be cleared or refreshed by the security administrator. So that the historical log information can be erased or it can be taken as a backup copy in external storage devices.

Image Comparison Process

The main frame of this research is Image Comparison Process. In this module the captured motion images will be compared with the static image. These comparisons will be activated in a multithreading process. So that, each and every minute image will be captured and compared by the intelligent programming process. This comparison is categorized into three levels, which provides the Iteration to compare the pixels of images such as 50, 70, 90 percentage of

- Normal Security
- Average Security
- Advanced Security

The administrator allots these security choices.

Message Transmission to Cell Phone

Second level of this paper is transmitting messages to the cell phone. In this module the SMS modem (i.e. indicating GSM Modem) which is mainly used to transfer the images/messages. This module will be automatically engaged when the comparison ratio finds its specified target limitation. This captured motion image will be converted into photo format and transferred to the cell phone, which is able to display the images/messages.

Detail Description

In this Paper, there are two levels

- Function Allotment Process
- Pattern Matching Process

Function Allotment Process

In this Function Allotment Process, there are three levels that should be maintained (i.e. Administrator details, Function details and Setting of Port Communication.)

Administrator Details

In this Administrator details level is a Master module which contains the administrator profile, such as Administrator Name, Communication Address, Cell Numbers and all the necessary details. The administrator should fix their photo in this module for register their entry.

Function Details

Function detail is a major and important. It has three segments such as program entry area, Administrator Profile and Existing Program List.

In this module predefined web camera program will be invoked. In that the user must set the position of light settings, fixing the camera in a correct position and correct direction. After placing the static image, that is to be secured, the user must select and save the picture in this module. After finishing this process they must close the "Quick Cam" program. To fixing the static image is going to be compared, by using this image, the pattern matching operation will be invoked. New program entry functions can also be performed. The program code will be automatically generated. Then the User specify the venue of the camera fixed, setting the date as "From Date" to "To Date" of the program and the special security (i.e. the administrator name should be selected), so that any problem invokes automatically the SMS and it will be sent to this particular administrator. The important one is to select the authentication name more than one from the list. If the user needs to verify the authentication details, they can also see in the administrator profile area. In the below, the existing program list is specified to verify the function details. The user (Administrator) can cancel the operation or cancel the program at anytime.

Port Setting Details

It is a system-side module, from this the user may select the correct "COM Port", which is able to plug-in the Data Cable. To check this correct status first of all the user must plug-in the Data Cable in "COM Port1" and they must attach the GSM modem / the Cell Phone which contains the facility of SMS mailing. After connecting these components, in the status bar "Connecting to phone…" Message will be invoked. If it is not available in the status bar, the user must plug-in the Data Cable in "COM Port2" or check the proper connection of Data Cable with modem.

After they get the right signal they must press "Save Settings" button. This information will be automatically saves in the "registry" files in the machine. Instead of saving this information registry is the secure and independent area.

Pattern Matching Process

In this Pattern Matching Process, there are two levels to be maintained (i.e. Time details and Pattern Matching details.

Time Details

In this time detail module, what are all the operations performed at the time of processing details are collected (i.e.) record name, operations performed, date and time. These details are retrieved from the database, which we store in the admin module. This can search up to EOF. Here, the "Record name" is taken from the Administrator of First name and Last name. Then the "operations" details are performed like whether the record is inserted, modified and deleted. Here, the user sets the colors to identify the operations, which are performed. The date and time specifies the operation, when the process is invoked.

Pattern Matching

In the function detail module, fix one static image, this image will compare what the webcam will capture from motion image and these two images are compared. The motion images are converted into static image. These static images are maintained in the audit log, which indicates the security administrator, how long the camera will activate and error deductions. The comparison images will be activated in a multithreading process. So that, each and every minute image will be captured by the intelligent programming. This intelligent programming process will capture only the images not the insects. This comparison will be made by three stages which provides the Iteration to compare the pixels of images such as 50, 70, 90 percentage of Normal security, Average security and advanced security. These security choices are allotted by the administrator in the port settings module. If the two images are compared, any change occurs, the change picture forms displays. The administrator cell phone number retrieves from the database, if they select in the function detail module more than one authentication here it retrieves the more than one Cell Phone Numbers. In this com port will automatically retrieves from the registry files. If the comport is not set correctly, in the status bar error message will be displayed. **Error –2147220503 Mobile FBus connecting failed**, **Erc-1**. If the comport sets correctly, in the status bar message be displayed like 'connecting to phone….' After that 'Ready' message displays. Finally it displays the signal & cell phone battery numbers. Then it automatically sends the SMS message to the administrator cell phone within a few minutes. Wherever the administrator presents the SMS will sends. The administrator handsets the Message will be displayed by the code word "**Mercury Falling- MICSTWC**" the administrator knows some problem occurs, swiftly they can solve the problems.

Description/Algorithm

The SIMPLE comparison performs a pixel-by-pixel difference for each band of the images:

comp(x,y) = img1(x,y) - img2(x,y)

The RELATIVE comparison performs an pixel-by-pixel relative difference using the formula:

$$comp(x,y) = \frac{img1(x,y) - img2(x,y)}{img1(x,y)}$$

Totals are kept of the number of pixels below, equal to, and above the corresponding pixels in the reference image. The mean and variance are calculated from totals of the differences.

Implementation

In this very simple and attractive pattern matching algorithm that we used as the basis for the pattern matcher. After, all the valid pattern match locations for a static image and motion image capture. These will be compared by byte-by- byte or pixel-by-pixel accuracy of the both images. If not matches, the position must set and it increments the position.

Pattern Matching Algorithm

1. read n, m, T1, T2,..., Tn, P1, P2,..., Pm.
2. location <- 1.
3. repeat until location > (n - m + 1)
4. index < - 1
5. imagematch <- true
6. repeat until either (index > m) or (not imagematch)
7. if Pindex ! = Tlocation + index-1 then
8. imagematch <- false // end if
9. else
10. index <- index + 1 // end else
11. if imagematch then
12. write location // end if & end inner until
13. location <- location + 1 // end outer until
14. stop

Experimental Results

There are two methods to send an SMS/MMS

- GSM modem

• Data Cable for any Cell Phone Model (These can sent through with the help of Mobile FBUS Control).

GSM Modem

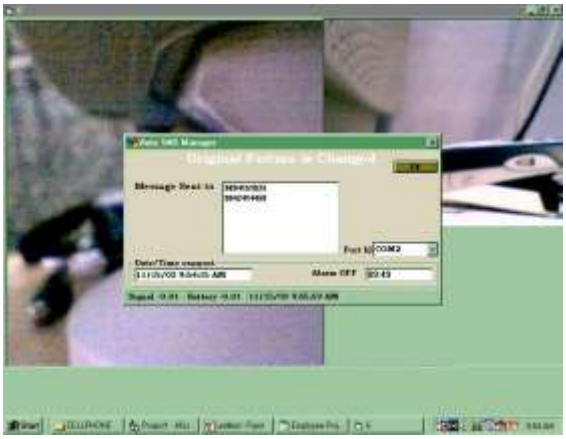
A GSM modem can be an external modem device, such as the Wavecom FASTRACK modem. Insert a GSM SIM card into this modem, and connect the modem to an available serial port on your computer. A dedicated GSM modem (external or PC Card) is usually preferable to a GSM mobile phone. This is because of some compatibility issues that can exist with mobile phones. For example, if you wish to be able to receive inbound MMS messages with your gateway, and you are using a mobile phone as your modem you must utilize a mobile phone that does not support WAP push or MMS. This is because the mobile phone automatically processes these messages, without forwarding them via the modem interface. Similarly some mobile phones will not allow you to correctly receive SMS text messages longer than 160 bytes (known as "concatenated SMS" or "long SMS"). This is because these long messages are actually sent as separate SMS messages, and the phone attempts to reassemble the message before forwarding via the modem interface. Now SMS/MMS gateway can simultaneously support multiple modems, provided that your computer hardware has the available communications port resources.

Mobile FBUS Control

The Mobile FBUS ActiveX Control is a Visual Basic ActiveX control for use in Visual Basic 5.0. It started as an experiment with mobile phones linked through a cable, and has now become a well-formed work in the form of an ActiveX control.

The communication methods called FBUS are used in Nokia mobile phones for data transmission, service and adjustments. It has researched and tested these communications methods to get information for developing better cables for mobile phones and PCs. The FBUS is a new solution and offers high-speed full-duplex communications link between the phone and the computer.

Selecting the Port



Conclusion

Thus we conclude that the main motive of this study paper is securing valuable and confidential objects covered with less economic, high security process and immediate "cutting edge technology" messaging system such as SMS and MMS.

The entire study contains separate audit log operation for each modules through which the administrator is able to know each status of this security operations.

The main advantage of this paper is sending messages to multiple administrators at a time.

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